REMARKS

This paper is submitted in response to the Office action dated January 22, 2009 (the "Office Action").

Claims 38-70, 111, 113-124, 126-137, 139-150, 152-163, 165-177, 179-191, 193-205, and 207-227 are pending in the application, including new claims 222-227.

Claims 38-53, 55-70, 111, 118, 124, 131, 137, 144, 150, 157, 163, 165-168, 177, 179-182, 191, 193-196, 205, and 207-210 stand rejected.

Claims 54, 113-117, 119-123, 126-130, 132-136, 139-143, 145-149, 152-156, 158-162, 169-176, 183-190, 197-204, and 211-221 are under objection.

The amendments add no new matter. Support for the amendments may be found throughout Applicant's Specification and Drawings as originally filed, for example in p. 19, line 28—p. 21, line 11; p. 35, line 13—p. 37, line 14. (Additional support can be found in FIG. 5 and the accompanying text of U.S. Patent Application No. 09/232,395, which was incorporated by reference in the present application.) The amendments to the claims have been made to expedite prosecution. While not conceding that the cited reference(s) qualify as prior art, but instead to expedite prosecution, Applicant has chosen to respond as follows. Applicant reserves the right to establish that the cited reference(s), or other references cited thus far or hereafter, do not qualify as prior art as to an invention embodiment previously, currently, or subsequently claimed. Applicant also reserves the right, for example in a continuing application, to pursue the previously pending claims or claims similar thereto. Applicant respectfully submits that the

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pending claims are allowable in view of the following remarks and the above amendments, and respectfully requests reconsideration of the pending rejections.

Allowable Subject Matter

Applicant is grateful for the indication that that objected claims 54, 113-117, 119-123, 126-130, 132-136, 139-143, 145-149, 152-156, 158-162, 169-176, 183-190, 197-204, and 211-221 would be allowable if rewritten in independent form, including all the limitations of the base claim and any intervening claims. Applicant wishes to maintain these claims in dependent form in view of the following remarks regarding the corresponding base claims.

Applicant has amended allowed claim 221 so that it depends on new claim 222, but otherwise includes substantially similar limitations as before. Applicant thus believes that claim 221 continues to present allowable subject matter as acknowledged by the Examiner, and respectfully submits that new claim 222 is also allowable.

Formal matters

Applicant requests clarification of the status of the following claims and the grounds for the pending rejections.

Claim 40: clarification requested.

On p. 5, the Office Action indicates that claim 40 is among the claims rejected over Spiegel in view of Perlman. However, the ensuing discussions of the Spiegel-Perlman combination do not appear to address the limitations of claim 40. On pp. 2 and 7, the Office Action states that claim 40 stands rejected over Spiegel in view of Perlman and further in view of Chou. Applicant requests clarification on the grounds of rejection of claims 40.

Claim 47: clarification requested.

On p. 5, the Office Action indicates that claim 47 is among the claims rejected over Spiegel in view of Perlman. However, the ensuing discussions of the Spiegel-Perlman combination do not appear to address the limitations of claim 47. On p. 7, the Office Action states that claim 47 stands rejected over Spiegel in view of Perlman and further in view of Chou. Applicant requests clarification on the grounds of rejection of claims 47.

Claims 42 and 46: clarification requested.

On p. 5, the Office Action indicates that claims 42 and 46 are among the claims rejected over Spiegel in view of Perlman. However, the ensuing discussions of the Spiegel-Perlman combination do not appear to address the limitations of claim 42 or 46. On p. 8, the Office Action states that claims 42 and 46 stand rejected over Spiegel in view of Perlman and further in view of Martin. Applicant requests clarification on the grounds of rejection of claims 42 and 46.

Claims 43 and 44: clarification requested.

On p. 5, the Office Action indicates that claims 43 and 44 are among the claims rejected over Spiegel in view of Perlman. However, the ensuing discussions of the Spiegel-Perlman combination do not appear to address the limitations of claim 43 or 44. On p. 7, the Office Action states that claims 43 and 44 stand rejected over Spiegel in view of Perlman and further in view of Waclawsky. Applicant requests clarification on the grounds of rejection of claims 43 and 44.

Claim 52: clarification requested.

On p. 5, the Office Action indicates that claim 52 is among the claims rejected over Spiegel in view of Perlman. However, the ensuing discussions of the Spiegel-Perlman combination do not appear to address the limitations of claim 52. On pp. 2 and 9, the Office Action states that claim 52 stands rejected over Spiegel in view of Perlman and further in view of Bare. Applicant requests clarification on the grounds of rejection of claim 52.

Claims 53 and 70: clarification requested.

On p. 12, the Office Action indicates that dependent claims 53 and 70 stand rejected over a combination of Spiegel and Fukushima. However, claims 53 and 70 depend on independent claim 38, which stands rejected over Spiegel and Perlman. Thus, Applicant understands the rejection of claims 53 and 70 to be based on a combination of Spiegel, Perlman, and Fukushima. If this understanding is incorrect, Applicant requests that the correct grounds for rejection be presented in a subsequent non-final Office Action.

Claims 118, 131, 144, and 157: clarification requested.

On p. 12, the Office Action states that claims 118, 131, 144, and 157 stand rejected under § 103(a) over Spiegel and Fukushima. On p. 2 and 11, the Office Action states that these claims stand rejected under § 102(e) over Fukushima. The rejections regarding these claims in the Office Action appear to rely only on passages cited from Fukushima. *See*, Office Action, p. 13. Applicant requests clarification of the grounds of rejection of claims 118, 131, 144, and 157.

Rejections under § 103(a) over art including Spiegel and Perlman

Independent claim 38 stands rejected under 35 U.S.C. § 103(a) as purportedly being unpatentable over U.S. Patent No. 5,649,108 issued to Spiegel et al. ("**Spiegel**") in view of U.S. Patent No. 5,455,865 issued to Perlman ("**Perlman**"). Office Action, p. 5.

Claims 39-52, 55-68, and 70 depend on independent claim 38, and also stand rejected under § 103(a) as purportedly being unpatentable over Spiegel in view of Perlman. *Id.*

Claims 53 depends on independent claim 38, and stands rejected under § 103(a) as purportedly being unpatentable under § 103(a) over Spiegel in view of Perlman and U.S. Patent No. 6,490,246 issued to Fukushima, et al. ("**Fukushima**"). Office Action, pp. 5, 12.

Claim 69 depends on independent claim 38, and stands rejected under § 103(a) as purportedly being unpatentable under § 103(a) over Spiegel in view of Perlman and U.S. Patent No. 6,430,150 issued to Azuma, et al. ("**Azuma**"). Office Action, p. 6.

The Office Action also asserts additional rejections for some of the above-noted claims. Claims 40 and 47 stand rejected under § 103(a) as purportedly being unpatentable over Spiegel in view of Perlman, and further in view of U.S. Patent No. 5,850,526 issued to Chou ("**Chou**"). Claims 43 and 44 stand rejected under § 103(a) as purportedly being unpatentable over Spiegel in view of Perlman, and further in view of U.S. Patent No. 5,197,127 issued to Waclawsky et al. ("**Waclawsky**"). Claims 42 and 46 stand rejected under § 103(a) as purportedly being unpatentable over Spiegel in view of Perlman, and further in view of U.S. Patent No. 6,092,086 issued to Martin et al. ("**Martin**"). Claims 52 stands rejected under § 103(a) as purportedly being unpatentable over Spiegel in view of Perlman, and further in view of U.S. Patent No. 6,865,160 issued to Bare ("**Bare**").

Applicant respectfully submits that the claims are allowable because a person having ordinary skill in the art would not make the proposed combination of references.

Independent claim 38 recites:

> 38. A method comprising:
>
> receiving a protocol packet, wherein
>
> > said protocol packet is transmitted from an origin node,
> >
> > **said protocol packet is broadcast to a plurality of neighbors of said origin node** to find a target node of said protocol packet,
> >
> > said protocol packet is configured to record a protocol packet path history from said origin node to said target node, and
> >
> > said protocol packet path history comprises information regarding a topology of at least a portion of said network; and
> >
> > storing, in a memory, information regarding said protocol packet.

(Emphasis added.)

The Office Action notes on p. 6 that Spiegel does not disclose the transmission of a protocol packet that is broadcast "to a plurality of neighbors of said origin node." Applicant agrees with this assessment. With regard to these limitations, the Office Action turns to Perlman.

Perlman discusses the concept of "flooding" to broadcast packets over a network:

> Broadcasting consists of sending a packet to every node on the network.
>
> One method of broadcasting packets over the network is called flooding. Flooding requires each node which receives a packet to transmit it to each of its neighboring nodes, except the node from which it was received. Copies of the packet eventually travel throughout the network to every node over every communication link. Typically multiple copies of the packet reach every node.

Perlman, 1:43-52.

But Perlman very clearly teaches that this broadcasting/flooding is not the same as direct communication, such as used in Spiegel. Perlman makes clear that broadcasting is an <u>alternative</u> to a more direct communication between nodes. "Packets may be transmitted from a given source node to a given destination node either by broadcasting the packet over the entire network or by routing the packet along a specific group of nodes connecting the source to the destination." *Id.* at 1:39-43. Instead of broadcasting, "[a]lternatively, a packet may be sent to a destination node via a single route." *See*, Perlman, 1:53-60. Pearlman notes that this single-route communication, which it calls "path specific routing," and broadcasting each have comparative advantages and disadvantages. *See*, Perlman, 1:61-67. These advantages and disadvantages can be considered by system designers in view of particular environments or existing system demands.

The proposed replacement of the direct communications from Spiegel with the broadcasting of Perlman would eliminate the need for the detailed procedures of source routing that are painstakingly detailed in Spiegel. The proposed modification would not only hinder the operation of Spiegel's system in its environment, but would eviscerate the need for Spiegel's detailed teachings, since a broadcast could make a quick, but costly, evaluation of multiple possible routings.

A person having ordinary skill in the art would readily understand that one purpose of choosing source routes in Spiegel would be to avoid the resource-intensive broadcast flooding, such as described in Perlman. In choosing a source route, Spiegel considers a variety of candidate routes in sequence—one at a time—to find the desired route. An example is detailed in col. 10, line 11—col. 13, line 23 of Spiegel. In this example, Spiegel teaches that multiple

routes are evaluated, tested, blocked, and cranked back, one after another, before a final route is selected. *See also,* Spiegel, Abstract, line 5 *ff.*

Spiegel specifically uses routing tables to identify candidate routes for connection setup packets. *Id.* at 1:50-53. The chosen source route for a connection setup packet is written into source route field 33 of the packet. *Id.* at 7:4-10. Upon failure of a particular candidate path to provide a desired connection in Spiegel, a new packet can be generated and transmitted along a new candidate path. *See, e.g.,* Spiegel, 11:55—12:17. This procedure, which is elaborated in columns 8-12 (among others) and in FIGs. 7A-7D (among others) of Spiegel, would be unnecessary if Spiegel were to broadcast its connection setup packets. If Spiegel were modified to use broadcasting, as proposed in the Office Action, all of Spiegel's routes would be evaluated substantially concurrently and Spiegel's deliberate one-after-another evaluation procedures would be pointless.

Indeed, an advantage of Spiegel's non-broadcast procedure is recognized by Perlman, which explicitly notes that "path specific routing[ ] is less costly than flooding because it avoids redundant transmissions." Perlman, 1:61-62 (emphasis added). Spiegel's evaluation of possible source routes one after another appears to be directed to this benefit (or some other benefit) of eschewing flooding. Such benefits would evaporate if Spiegel's system were modified to use Perlman's simultaneous broadcast instead, which reaches "to every node on the network" (Perlman, 1:43-44).

Whatever the reason for avoiding a broadcast flooding, it is clear that Spiegel's tools are used in an environment that does avoid such flooding. Spiegel's teachings would neither be needed nor helpful in an environment where a broadcast flooding would concurrently evaluate multiple possible routes. A person having ordinary skill in the art using the detailed teachings of

Spiegel would do so with a deliberate goal of avoiding flooding. A skilled person would therefore not make the proposed modification of Spiegel by using Perlman's broadcast flooding, which would fail this goal.

The rejections of claims 38-53 and 55-70 depend on this modification of Spiegel with Perlman. At least because a skilled person would not make this modification, claims 38-53 and 55-70 are allowable under § 103(a). Accordingly, Applicant respectfully requests that the rejections of claims 38-53 and 55-70 under § 103(a) be withdrawn.

Rejections under § 102(e) over Fukushima

Claims 111, 118, 124, 131, 137, 144, 150, 157, 163, 177, 191, and 205 stand rejected under 35 U.S.C. § 102(e) as purportedly being anticipated by U.S. Patent No. 6,490,246 issued to Fukushima et al. ("Fukushima"). Office Action, p. 11. Applicant respectfully submits that the claims are allowable because the cited passages of the Fukushima fail to disclose each limitation of Applicant's claims.

Independent claims 111, 124, 137, and 150.

For example, independent claim 111 recites:

> 111. A method of processing a get link state advertisement packet comprising:
>
> **receiving said get link state advertisement packet** at a downstream node, wherein
>
> said get link state advertisement packet is sent by a sending node,
>
> said get link state advertisement packet **comprises at least one node identifier,**

said at least one node identifier identifies a node in a network for which said sending node seeks a link state advertisement, and

said downstream node and said sending node are nodes in said network;

sending at least one link state advertisement from said downstream node to said sending node; and

receiving an acknowledgement of said at least one link state advertisement at said downstream node.

(Emphasis added.)

The cited passages of Fukushima do not disclose, nor fairly suggest, that a node identifier in a received packet identifies a node for which a sending node "seeks" a link state advertisement. With regard to this limitation, the Office Action on p. 8 cites portions of the following passages of Fukushima:

Meanwhile, each router, while it transmits or receives Hello packets and network link-state information, manages the states of other routers on the network to which this router is connected and also manages the states of the interfaces through which this router is connected to networks. With regard to the states of routers, each router manages the routers' ID's, and checks if each of those routers is aware of this router, or checks if each of those routers has completed the transmission and reception of network link-state information. With regard to interface state, each router manages the addresses of the interfaces and other routers connected to a network to which an interface is connected.

A list of other routers, which is included in a Hello packet, is prepared according to the states of routers and the states of interfaces mentioned above.

Each router monitors the active modes of the other routers according to information from Hello packets it receives. More specifically, if there is any other router from which the router has not received Hello packets for longer than a fixed period, the router decides that a failure has occurred in this other router.

Fukushima, 2:10-32.

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These passages from Fukushima teach that each router checks if each other router on the network is aware of the router, or checks if each of those routers has completed the transmission and reception of network link-state information. However, these teachings fall short of disclosing the limitations of Applicant's claim 111. In particular, there is no indication in the cited passages that Fukushima's Hello packet identifies a node for which the sending node seeks a link state advertisement.

The above-quoted passages describe the operation of a first router ("each router") that transmits or receives network link-state information. The Office Action appears to view this first router as receiving the "get link state advertisement packet" in Applicant's claim 111. In a new argument on p. 3, the Office Action also appears to equate "said node for which said sending node seeks the link state advertisement" in claim 111 with a second router whose network link state information is undergoing reception by a third router that is being checked by the first router. *See*, Fukushima, 2:14-19 ("each router . . . checks if each of those routers has completed the transmission and reception of network link-state information").

Fukushima teaches that routers can exchange link-state information. *See,* Fukushima, 1:44-67. But even if the Fukushima system could be seen as using the link state advertisements of Applicant's claim 111 (and Applicant does not concede this point), the cited passages do not teach that the first router in Fukushima receives a request for any information about the second or third routers. In particular, there is no teaching that this first router receives a get link state advertisement packet that relates to the second or third routers in Fukushima. Moreover, the cited passages fail to teach or suggest that any such packet received at the first router would include a node identifier for the third router in Fukushima. Accordingly, the cited passages fail to disclose receiving a get link state advertisement packet that includes a node identifier which

"identifies a node in a network for which said sending node seeks a link state advertisement," as would be required to meet the limitations of Applicant's claim 111.

At least for these reasons, independent claim 111 is allowable under § 102(e). At least for similar reasons, independent claims 124, 137, and 150 are also all allowable under § 102(e). Claims 118, 131, 144, and 157 depend variously from independent claims 111, 124, 137, and 150, and are therefore similarly allowable under § 102(e), being dependent on allowable base claims. Accordingly, Applicant respectfully requests that the rejections under § 102(e) of claims 111, 118, 124, 131, 137, 144, 150, and 157 be withdrawn.

Independent claims 163, 177, 191, and 205.

As another example, independent claim 163 recites:

> 163. A method comprising:
>
> receiving a hello packet at a downstream node, wherein said hello packet comprises a link state advertisement;
>
> processing said link state advertisement, wherein processing said link state advertisement includes **sending said link state advertisement from said downstream node**; and
>
> **sending an acknowledgement from said downstream node**, wherein said acknowledgement acknowledges all link state advertisements in said hello packet.

(Emphasis added.)

Claim 163 includes sending a link state advertisement "from said downstream node" and sending an acknowledgement "from said downstream node." With regard to these limitations, the Office Action cites features of FIG. 8 and passages (10:15-40) that discuss elements from FIG 2 (reproduced below).
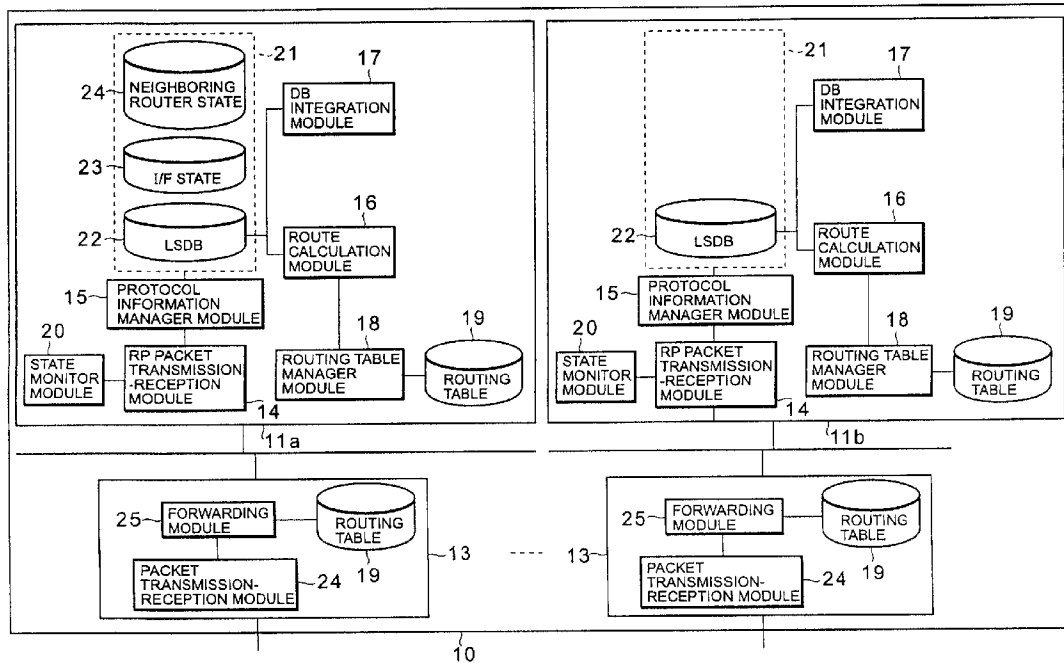
FIG. 2 of Fukushima

FIG. 2 illustrates Fukushima's multiplex router 10. Multiplex router 10 includes a

transmission-reception module 14 and a protocol information manager module 15. The cited

passages state, in relevant part:

> The RP packet <u>transmission-reception module 14, when it is</u>
> <u>started, transmits routing protocol packets, such as Hello packets,</u>
> <u>onto the networks</u> directly connected to the multiplex router 10,
> <u>and receives routing protocol packets from other routers</u> (step 121).
> If <u>a received packet has come from a neighboring router,</u> the
> module 14 checks whether the presence of which has been or has
> not been recognized (step 122). If the presence of which has not
> been recognized, the <u>module 14 notifies the protocol information</u>
> <u>manager module 15</u> of the newly-detected neighboring router (step
> 123). If the presence of which has been recognized (step 124), the
> <u>module 14 sends this network link-state information to the protocol</u>
> <u>information manager module 15</u> (step 125).

> FIG. 9 shows the procedure of the process steps of the protocol
> information manager module 15 in the route calculation unit 11 in
> the active mode.

> In this process, the <u>protocol information manager module 15</u>
> <u>receives information from the RP packet transmission-reception</u>
> <u>module 14,</u> and checks if information received is network link-
> state information (step 131). If the information is not network

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link-state information, in other words, if the information is about a
neighboring router, the module 15 generates neighboring router
state 24 and interface state 23 from information received (step 132).
On the other hand, if the information is network link-state
information, the module 15 checks if the information received
agrees with the contents of the link-state data base 22 (step 133).

Fukushima, 10:19-46 (emphasis added).

The Office Action appears to equate Applicant's link state advertisement with

Fukushima's routing protocol ("RP") packet, and to equate Applicant's downstream node with

Fukushima's multiplex router 10. Even if this characterization of Fukushima is correct (and

Applicant does not concede this point), the cited passages of the references fail to disclose each

limitation of claim 163.

The above-quoted passages of Fukushima, and the accompanying features in the figures,

teach that a multiplex router 10 can transmit routing protocol packets, such as Hello packets,

onto the networks directly connected to the multiplex router 10, and can receive routing protocol

packets from other routers. However, neither of these operations sends a link state advertisement,

received in a hello packet, from router 10. And of these operations sends an acknowledgement

from router 10. These above-quoted passages do not describe any other communications that

occur between routers.

The only other communications in the above-quoted passages are various

communications within a router: between modules 14 and 15 in multiplex router 10. A

reference to Fukushima's FIG. 1 and 2 clearly shows that these elements are in multiplex

router 10, which the Office Action equates with Applicant's downstream node. Thus, these cited

communications could not, and would not, be seen by a person having ordinary skill in the art as

being communications "from" Applicant's downstream node. Accordingly, they do not meet

Applicant's limitations of "sending said link state advertisement from said downstream node" or "sending an acknowledgement from said downstream node."

At least for these reasons, Applicant respectfully submits that independent claim 163 and all claims dependent therefrom are allowable under § 102(e). At least for similar reasons, independent claims 177, 191, and 205 are also allowable under § 102(e). Accordingly, Applicant respectfully requests that the rejections under § 102(e) of claims 163, 177, 191, and 205 be withdrawn.

Rejections under § 103(a) over Spiegel and Fukushima

Claims 118, 131, 144, 157, 165-168, 179-182, 193-196, and 207-210 stand rejected under § 103(a) as purportedly being unpatentable over Spiegel in view of Fukushima. *See,* Office Action, p. 9, lines 12-14, and p. 10, lines 16-18. Applicant respectfully submits that the claims are allowable because a person having ordinary skill in the art would not make the proposed combination of references, and further because the cited passages of the references, whether taken individually or in combination, fail to disclose each limitation of Applicant's claims.

For example, claim 118 depends on claim 111. The Office Action does not rely on any teachings of Spiegel to support the rejection of claim 118. *See,* Office Action, p. 10. Thus, the above discussion regarding independent claim 111 and the relevant shortcomings of Fukushima apply with full force to support the patentability of dependent claim 118. Indeed, the cited passages of Spiegel fail to remedy the shortcomings of the cited passages of Fukushima with regard to claim 111, whether these references are considered individually or in combination.

Accordingly, claim 118 is allowable under § 103(a). At least for similar reasons, claims 131, 144, 157, 165-176, 179-190, 193-204, and 207-218 are also allowable under § 103(a).

New Claims

New claims 222-227 depend variously on independent claims 38, 111, and 163, and are therefore allowable at least for the reasons described above. In addition, dependent claims 222-227 include additional limitations that are absent from the cited passages of the references.

For example, new claim 223 depends on claim 111 and recites that:

> **said at least one link state advertisement is a link state**
> **advertisement for a node other than said downstream node.**

Claim 111 recites that the link state advertisement is sent from a "downstream node," which the Office Action appears to equate with router 10. Router 10 is the router that receives a packet and checks on a neighboring router in the cited FIG. 8, block 122. *See,* Fukushima, 10:16-26. Fukushima teaches that routers can exchange link-state information. *See,* Fukushima, 1:44-67. But there is no teaching in the cited passages that router 10 communicates link-state information on behalf of other routers. Thus, any link-state information sent from router 10 in Fukushima would not be understood to be for a node other than router 10. Accordingly, Fukushima fails to teach that "said at least one link state advertisement is a link state advertisement for a node other than said downstream node," as would be required to meet new claim 223.

CONCLUSION

In view of the amendments and remarks set forth herein, the application and the claims therein are believed to be in condition for allowance and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is invited to telephone the undersigned at 512-439-5097.

If any extensions of time under 37 C.F.R. § 1.136(a) are required in order for this submission to be considered timely, Applicant hereby petitions for such extensions. Applicant also hereby authorizes that any fees due for such extensions or any other fee associated with this submission, as specified in 37 C.F.R. §§ 1.16 or 1.17, be charged to deposit account 502306.

I hereby certify that this correspondence is being submitted to the U.S. Patent and Trademark Office in accordance with 37 C.F.R. § 1.8 on April 22, 2009 by being (a) transmitted via the USPTO's electronic filing system; or (b) transmitted by facsimile to 571-273-8300; or (c) deposited with the U.S. Postal Service as First Class Mail in an envelope with sufficient postage addressed to: Mail Stop Amendment, Commissioner for Patents, P. O. Box 1450, Alexandria, Virginia, 22313-1450.

 /Cyrus F. Bharucha /   April 22, 2009
  Cyrus F. Bharucha   Date

Respectfully submitted,

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